

MISCELLANEOUS FIELD STUDIES

SE SAINT ELIAS TERRANE (5) -- Intermediate - to high-grade metamorphic equivalent of the Chugach terrane;

characterized by sillimanite-bearing quartz-mica schist, amphibolite-grade quartz-mica schist and gneiss, and migmatitic rocks indicative of anatexis (Hudson and Plafker, 1982)

SHE SHEENJEK TERRANE (1, 3) -- Sedimentary sequence composed of

thin, basinal Mississippian limestone overlain by upper

Paleozoic to Triassic(?) radiolarian chert and varicolored argillite; lacks pillow basalt but contains abundant sills of gabbro and diabase of probable early ST STIKINIA TERRANE (3) -- Granodioritic batholithic rocks of Early Jurassic age that are continuous from Alaska into

the Yukon Territory, Canada, where they are regarded as

allochtonous and part of the Stikinia terrane. Similar

granitic rocks, such as those of the Taylor Mountain batholith, farther to the northwest than those shown of the terrane map and surrounded by metamorphic rocks of the Yukon-Tanana terrane, could be structural outliers

SU SUSITNA TERRANE (5) -- Large slab of pillow basalt and intercalated volcaniclastic sedimentary rocks containing Upper Triassic (Norian) fossils (Jones and

SV SEVENTYMILE TERRANE (3) -- Scattered remnants of a folded sheet of harzburgitic ultramafic rock, gabbro, pillow basalt, and red radiolarian chert (locally dated as Permian) (Keith and others, 1981) TG TOGIAK TERRANE (4)--Structurally complex, thick assemblage of Jurassic and Lower Cretaceous volcanic and volcaniclastic rocks, including pillowed flows, tuffs, breccias, conglomerate, graywacke, chert, and minor

(Hoare and Coonrad, 1978) TK TIKCHIK TERRANE (4)--Structurally complex assemblages of radiolarian chert of Paleozoic and Mesozoic ages,

Permian limestone and clastic rocks, and pillow basalt and graywacke. Internal stratigraphic relations are unknown (Hoare and Coonrad, 1978) TOZITNA TERRANE (1, 2, 3)--Structurally complex assemblage of gabbro, pillow basalt, massive basalt and diabase, argillite, tuff, chert, graywacke, minor conglomerate, and Permian(?) limestone composed of comminuted

prismatic bivalve shells (Churkin and others, 1982).

Radiolarian cherts range in age from Mississippian to

shelly argillaceous limestone of Early Cretaceous age

Triassic; sparse radiometric ages (K/Ar) from gabbros are Late Triassic, although Paleozoic basaltic rocks are probably present. TZ includes the Rampart Group of east-central Alaska (Brosge and others, 1969) VEN VENETIE TERRANE (1, 3)--Sedimentary sequence composed of a basal unit of graywacke, siltstone, and shale (locally phyllitic) with very minor blocks of limestone, overlain (structurally?) by folded radiolarian chert, varicolored (red and green) argillite and minor volcaniclastic rocks. Age of the clastic rocks has not been well established, although spores from clastic

rocks and corals from limestone are both of probable Devonian age. Radiolarian cherts from the upper unit range in age from Mississippian to Triassic, and volcaniclastic rocks are also Triassic WOODCHOPPER CANYON TERRANE (3) -- Pillow basalt and pillow

(and possibly originally in stratigraphic sequence)

Silurian and Devonian limestone and dolomite. Undated clastic rocks form upper part of this sequence (Churkin

cherty argillite of Ladinian age, overlain by thousands of meters of subaerial to pillowed basalt. Above this

argillaceous and calcareous rocks. Succeeding Jurassic

shale, and maroon to green slate; fossils of probable

errane. WS is referred to as the "Beaver Terrane" by

greenschist metamorphism of the nearby Yukon-Tanana

basalt, meta-chert, and blocks of Devonian limestone and shale, in a matrix of upper Mesozoic conglomeratic

containing structurally interleaved lenses of disrupted chert, argillite, and volcanic rocks. Includes Eocene

complex assemblage of Precambrian(?) to lower Paleozoic fine-grained clastic rocks (such as the slate of the

limestone of Ordovician and Silurian ages. Younger

may include rocks of late Precambrian, Cambrian, and

and gneiss, quartzite, quartz-rich grit, metarhyolite, gneissic plutonic rocks, and minor marble. Internal

stratigraphy is unknown; terrane is probably composite,

although mid Paleozoic granitoids and Devonian marble

appear to be present. Terminal metamorphic event seems to be late Mesozoic on the basis of K/Ar dates (Foste,

dotted where concealed beneath postaccretion Cenozoic

depositional contacts and faults that are not terrane

ork region), argillaceous limestone, and fossiliferous

strata are estimated to be as much as 3,000 m thick and

are platformal and basinal Upper Triassic limestones

WRANGELLIA TERRANE (5) -- Well-known stratigraphic assemblage

consisting of basal upper Paleozoic arc-related volcanic breccias, flows, and volcaniclastic rocks, overlain by nonvolcanic Permian limestone, pelitic rocks, and chert. Triassic rocks commence with black

that grade upward into basinal, spiculitic,

Silberling and others, 1981)

Churkin and others (1982)

and Cretaceous rocks are predominantly clastic MacKevett, 1978; Jones and others, 1977; and

WICKERSHAM TERRANE (3) -- Quartz-rich sandstone and grit,

developed penetrative metamorphic fabric and

WINDY TERRANE (5) -- Disrupted assemblage of serpentinite,

YAKUTAT TERRANE (5) -- Upper Mesozoic graywacke and shale,

basalt and shale rich in organic material

YORK TERRANE (2) -- Weakly metamorphosed, structurally

Devonian ages (Sainsbury, 1969; Hudson, 1977)

deformed and metamorphosed rocks occupying much of east-central Alaska and adjoining Yukon Territory of Canada. Dominant lithologies are quartz-mica schist

but meaningful regional subdivisions are not yet

1976). YT is referred to as "Yukon Crystalline

NONACCRETIONARY CONTINENTAL ROCKS

Terrane" by Churkin and others (1982)

NAm NORTH AMERICA--Continental rocks of North America not

\_\_\_\_\_TERRANE-BOUNDING FAULT--Dashed where approximately located;

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accreted during Phanerozoic time

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available. Ages of protoliths are largely unknown,

YUKON-TANANA TERRANE (3, 5) -- Enormous tract of poly-

breccia, tuff, and volcanic graywacke of the Woodchopper Volcanics, as well as minor black shale and fossiliferous limestone (Churkin and others, 1982): Corals, brachiopods, and graptolites from the shale and imestone beds are Devonian in age WEST FORK TERRANE (5) -- Massively bedded volcanic mudstone and intermediate or mafic tuff structurally juxtaposed

with a unit of disrupted argillite, radiolarian chert and sandstone. Radiolarians in chert are Late Jurassic in age. Lenses and fault slivers of phosphatic, sandy or conglomeratic limestone occur in both the massive tuffaceous mudstone and the disrupted chert-argillite units and contain Early Jurassic mollusks including riassic limestone, Upper Triassic redbeds, pillow basalt, limestone, sandstone, and shale, and Jurassic argillite, sandstone, and chert. CH overlies highly WHM WHITE MOUNTAINS TERRANE (3) -- Ordovician volcanic and volcaniclastic rocks and conglomerate overlain by

CW CLEARWATER TERRANE (5) -- Poorly known, structurally complex assemblage of argillite, pillow basalt, and shallow-

CRAZY MOUNTAINS TERRANE (3) -- Quartzitic sandstone containing trace fossil Oldhamia of probable Cambrian age, as well as younger sandstone, grit, slate, chert, and carbonate rocks, some of which are as young as late Early Devonian (Churkin and others, 1982). As suggested by Churkin and others (1982), this terrane may be related to the Wickersham terrane to the southwest DL DILLINGER TERRANE (4, 5)--Complexly folded and faulted

GD GOODNEWS TERRANE (4) -- Disrupted assemblage of chert, pillow basalt, tuff, minor limestone, and blocks of ultramafic rock; dated limestones range from Ordovician to Permian; Lawsonite-bearing metamorphic rocks locally developed

melanged, assemblage of pillow lava, pillow breccia, and uff of andesitic to basaltic composition interbedded with sandstone and mudstone with minor limestone. Contains rare planktonic foraminifera of Late Cretaceous and Paleocene age and pillow lava of Paleocene age; intruded by sparse plutons of quartz diorite to tonalite composition with radiometric ages of about 62 Ma (Byrne, 1982: Plafker and others, 1985). INNOKO TERRANE (2) -- Folded and disrupted assemblage of

rocks are generally similar to those of the Angayucham terrane, but large volumes of pillow basalt, gabbro, and diabase characteristic of that terrane are absent in the KANDIK RIVER TERRANE (3) -- Deformed thick sequence of flyschoid pelitic rocks and sandstone, which is mainly

KAGVIK TERRANE (1) -- Disrupted and strongly folded assemblage of chert, argillite, limestone turbidites, minor tuff, and intermediate to silicic volcanic rocks that are locally mineralized (Nokleberg and Winkler, 1982); dated cherts range in age from Mississippian to Triassic. This assemblage has been interpreted by Churkin and others (1979) to represent a deep-water, allochthonous oceanic assemblage deformed by collision of a southern Paleozoic island-arc terrane and a northern continental terrane. Other workers (such as Mull and others, 1982) believe that KG was deposited in an intracratonic basin and that it forms the upper part of the Endicott Mountains subterrane of the Arctic Alaska terrane. Distribution of the Kagvik sequence of Churkin and others (1979) is shown on the terrane map so that readers may see the distribution of the rocks in question. In our opinion, the conflicting interpretations remain unresolved

KAHILTNA TERRANE (4, 5) -- Structurally disrupted deep marine, partly volcaniclastic, flyschoid graywacke and pelitic rocks, including minor amounts of chert, limestone, and conglomerate. KH is mainly of Early Cretaceous age, but includes rocks ranging in age from Late Jurassic to early Late Cretaceous (Cenomanian). Metamorphism ranges from zeolite to amphibolite grade

KILBUCK TERRANE (4) -- Gneiss and schist exposed in the Kanektok River region, including biotite-hornblende gneiss, garnet amphibolite, quartz-mica schist, and marble. Radiometric ages indicate metamorphism during

KACHEMAK TERRANE (5) -- Small sliver of pillow basalt, chert, and minor limestone structurally wedged between the Peninsular terrane and the Chugach terrane.

KOYUKUK TERRANE (2) -- Andesitic flows, tuffs, breccias, agglomerates, conglomerates, tuffaceous graywacke, and mudstone; local intercalations of shelly limestone contain Early Cretaceous (Valanginian) fossils. According to Patton (1973), a depositional base of the

LIVENGOOD TERRANE (3) -- Highly folded but weakly metamorphosed assemblage of Paleozoic rocks, including the basal Livengood Dome Chert (Ordovician) and overlying dolomite, chert, volcanic rocks, serpentinite, and fossiliferous shale, sandstone, grit, and minor limestone of Devonian age. No basement is known, and the Livengood terrane appears to rest structurally on deformed upper Mesozoic flysch (Churkin and others, 1980)

MAN MANLEY TERRANE (3) -- Complexly deformed flyschoid Mesozoic sedimentary rocks including Upper Triassic argillite and chert, Upper Jurassic quartzite containing clas containing Valanginian and Albian fossils, and volcanic conglomerate of uncertain age. MAN is intruded by mid Cretaceous granitic rocks and by gabbro and

Triassic (Norian) pillow basalt, gabbro, and diabase; upper part is deformed flysch and chert of Late Jurassic(?) to Cretaceous age. MK includes the Red Paint subterrane (Jones and others, 1982), composed of chert ranging in age from Mississippian to Late riassic, thrust over and folded with the upper MACLAREN TERRANE (5) -- Pelitic gneiss and schist,

amphibolite, and foliated granodiorite. In part, ML is a high-grade metamorphosed equivalent of upper Mesozoic protoliths not present in nearby flysch assemblage MN MINCHUMINA TERRANE (3, 5) -- Complex folded assemblage of

MNK MINOOK TERRANE (3) -- Upper Paleozoic (Permian?) flysch with minor beds of chert-pebble grit and conglomerate. MNK Baldry terranes, on north with the Tozitna terrane, and n southeast with the Wickersham terrane and Mesozoic flysch of the Manley terrane. Eastern extent of

assemblage of sedimentary and volcanic rocks, including: Ordovician graptolitic shale and associated(?) pillow basalt, massive Silurian imestone, Upper Devonian sandstone, shale, conglomerate, and reefal limestone; uppermost Devonian to Pennsylvanian radiolarian chert; Permian flysch, chert, argillite, and conglomerate (locally plant bearing); and associated pillow basalt and gabbro that

NN NENANA TERRANE (5)--Folded and locally metamorphosed limestone, quartzite, black siltstone, and gabbro; Late Triassic pelagic bivalves known from the Wells Creek area. Some of these rocks superficially resemble those of the structurally disjunct Triassic rocks of the Pingston terrane, but they probably represent deposition in shallower water as evidenced by locally abundant calcareous bioclasts and the higher percentage

NX NIXON FORK TERRANE (2, 3, 4) -- Stratified sequence of Paleozoic reefal and platformal carbonate rocks (Ordovician to Upper Devonian) deposited on Precambrian basement and overlain by Permian, Triassic, and Cretaceous fossiliferous sedimentary rocks. Basemen

rocks are mainly pelitic and calcareous schists with minor marble, quartzite, and felsic metavolcanic rocks. Permian strata contain clasts of these basement rocks (Patton and others, 1980)

NY NYACK TERRANE (4) -- Andesitic, trachytic, and basaltic flows and breccias with interbedded volcaniclastic rocks; contains fossils of Middle Jurassic age (Hoare and

PORCUPINE TERRANE (1, 3) -- Precambrian(?) phyllite, slate, quartzite, and carbonate rocks, overlain by a thick, structurally and strati- graphically complex assemblage of shallow-water limestone, dolomite, and shale, ranging in age from Cambrian(?) to Late Devonian; upper Paleozoic rocks include sandstone, limestone, shale, siltstone, massive quartzite, and chert pebble onglomerate (Step Conglomerate of Permian age). No definite occurrences of Triassic rocks are known; however, Jurassic ammonite-bearing are present occur in two places in the northern part of the terrane (Imlay

PENINSULAR TERRANE (4, 5) -- Permian limestone; Upper Triassic (Norian) limestone, argillite, basalt, and tuff; Lower Jurassic andesitic flows, breccias, and volcaniclastic siltstone and sandstone; Middle Jurassic to Cretaceous fossiliferous clastic rocks and minor bioclastic limestone; and Jurassic batholithic granitic rocks. PE differs from the Wangellia terrane by the presence of a Lower Jurassic andesitic arc assemblage, Jurassic plutonic rocks, Norian basalt, and by the absence of upper Paleozoic andesitic basement and the Middle to Upper Triassic Nikolai Greenstone

PINGSTON TERRANE (3, 5) -- Strongly folded and weakly metamorphosed assemblage of upper Paleozoic (Pennsylvanian and Permian) phyllite, minor limestone and chert; Upper Triassic thin-bedded limestone, black sooty shale, calcareous siltstone, and minor quartzite; includes many intrusive bodies of gabbro, diabase, and

PRINCE WILLIAM TERRANE (4, 5) -- Strongly deformed thick assemblage of graywacke, argillite, minor conglomerate, pillow basalt, basaltic tuff, sills, and dikes. Contains rare fossils of Paleocene and Eocene age and is intruded by plutons of gabbro, tonalite, and granodiorite of early middle Eocene (51-53 ± 1.6 Ma) age (Tysdal and Case, 1979; Plafker and others, 1985). Lithologically similar to the Ghost Rocks

RB RUBY TERRANE (2, 3, 4) -- Structurally complex assemblage of metamorphic rocks, including phyllite, mica schist, marble, quartzite, calc-schist, dolomitic marble, amphibolite, and greenschist; also includes gneissic to nonfoliated granitic rocks, as well as metachert in northeastern part of terrane. Ages of protoliths and

most rocks are uncertain (Hudson, 1977)

Alaska, GN rests depositionally on both the Wrangellia

and Alexander terranes

original stratigraphic relations are unknown. RB is overthrust by the Tozitna and Angayucham terranes SEWARD TERRANE (2) -- Regionally metamorphosed, structurally complex assemblage of mica schist, micaceous calc-schist, metavolcanics (some containing

and Blying Sound quadrangles, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-1150,

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